

## RESEARCH LETTER

# Trends in COVID-19 death rates by racial composition of nursing homes

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**INTRODUCTION**

Coronavirus disease 2019 (COVID-19) has taken a severe toll on US nursing homes, which accounted for more than one-third of all COVID-19 deaths in the United States in 2020.<sup>1</sup> Nursing homes with low proportions of white residents accounted for a disproportionate share of these deaths through mid-September 2020.<sup>2</sup> We examine trends in COVID-19 death rates by racial composition of nursing homes through mid-April 2021.

**METHODS**

On May 25, 2020, the Centers for Medicare & Medicaid Services (CMS) began requiring nursing homes to report the weekly number of residents with suspected or laboratory-positive COVID-19 who died in the facility or another location and the weekly number of occupied beds. This weekly information is included in CMS's COVID-19 Nursing Home Dataset.<sup>3</sup> We used this dataset to determine weekly COVID-19 deaths per 1000 residents for each facility from May 25, 2020 to April 18, 2021. This information was then merged with data on facility characteristics from LTCfocus,<sup>4</sup> quality data from Nursing Home Compare,<sup>5</sup> and county data from USAFacts.<sup>6</sup> Using these data, we examined the census region in which each facility was located, the number of certified beds, and the overall CMS star rating (which measures quality using a scale of 1–5, with 1 indicating lowest quality and 5 indicating highest quality).<sup>7</sup> We also examined trends in community spread, which we

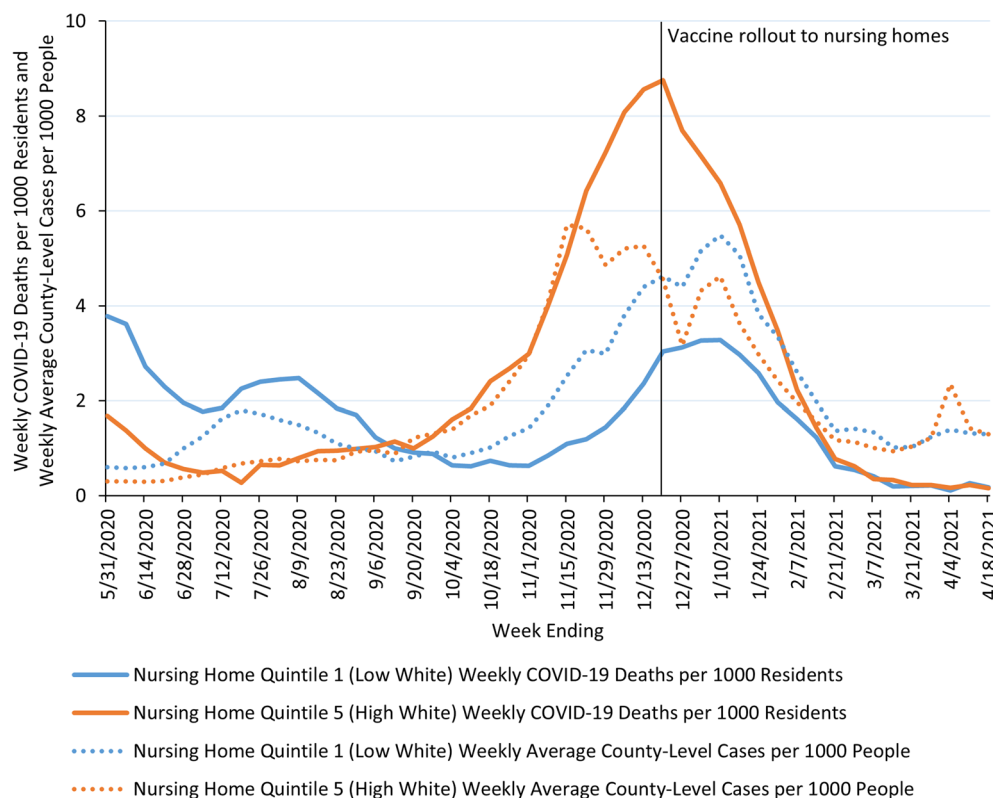
defined as the weekly average number of confirmed COVID-19 cases per 1000 people in the county. Our analysis included 13,820 nursing homes that passed CMS data quality checks and had no missing data. This sample represents over 90% of all nursing homes in the United States.

**RESULTS**

Nursing homes were categorized into quintiles based on the percentage of residents who were white, with quintile 1 indicating 0%–58.1%, quintile 2 indicating 58.1%–80.7%, quintile 3 indicating 80.7%–92.2%, quintile 4 indicating 92.2%–97.7%, and quintile 5 indicating 97.7%–100%. Nursing homes in quintile 5 (high white) were more likely than nursing homes in quintile 1 (low white) to be in the Midwest (56.2% vs. 15.1%) and had fewer beds (mean [SD], 84.3 [43.3] vs. 124.5 [77.5]) and higher star ratings (mean [SD], 3.7 [1.3] vs. 2.9 [1.4]).

As shown in Figure 1, although the high-white quintile initially had a lower death rate than the low-white quintile, it had a substantially higher death rate from mid-September 2020 to late February 2021. By the time of the vaccine rollout to nursing homes in late December 2020, the high-white quintile had experienced 3 months of higher community spread and its death rate had ballooned to nearly three times that of the low-white quintile (8.8 deaths per 1000 residents vs. 3.0 deaths per 1000 residents). After the vaccine rollout, death rates declined substantially for both groups. Overall, the high-white quintile had more total deaths than the low-white quintile (18,974 vs. 18,019) despite having fewer beds and higher star ratings.

See related letter by Gilman et al.



**FIGURE 1** Trends in coronavirus disease 2019 death rates and community spread by racial composition of nursing homes. Nursing homes were categorized into quintiles based on the percentage of residents who were white, with quintile 1 (low white) indicating 0%–58.1% and quintile 5 (high white) indicating 97.7%–100%. Source: Authors' analysis of data from the Centers for Medicare & Medicaid Services, LTCfocus, and USAFacts

## DISCUSSION

In this nationally representative study, we found that COVID-19 death rates by racial composition of nursing homes have changed in striking ways over the course of the pandemic. Although nursing homes with high proportions of white residents initially had fewer deaths per 1000 residents, they had substantially more deaths per 1000 residents after COVID-19 began to surge in their (primarily Midwestern) communities. By late December 2020, their death rate was three times that of nursing homes with low proportions of white residents. This gap was so large that even after the vaccine rollout to nursing homes it would take an additional 2 months for the gap to effectively close.

One possible explanation for the surge in death rate and community spread for nursing homes with high proportions of white residents in the months leading up to the vaccine rollout is the low level of concern about COVID-19 among many white Americans. Throughout the pandemic, Pew Research polls have consistently shown that the level of concern about COVID-19 varies greatly across racial groups, with whites especially less likely to view the coronavirus as a major threat both to their personal health and to the health of the US public.<sup>8</sup>

Similarly, these polls have also shown that even before vaccines became available to the general public, whites reported lower levels of mask use<sup>9</sup> and less concern about unknowingly spreading the disease to others.<sup>10</sup> We hope our findings help disabuse people of the false and misguided notion that COVID-19 does not need to be taken seriously or only affects certain racial groups.

## ACKNOWLEDGMENTS

### CONFLICT OF INTEREST

The authors have no conflicts.

### AUTHOR CONTRIBUTIONS

Both authors contributed to the study concept and design. Matlin Gilman performed the data analysis. Both authors contributed to the interpretation of the data and preparation of the manuscript.

### SPONSOR'S ROLE

Not applicable.

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